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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/661,632

09/15/2003

Chung-Sam Jun

253/033

7928

27849

7590

06/28/2007

LEE & MORSE, P.C.

3141 FAIRVIEW PARK DRIVE

SUITE 500

FALLS CHURCH, VA 22042

EXAMINER

PATEL, JAYESH A

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

06/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/661,632	Applicant(s) JUN ET AL.	
	Examiner Jayesh A. Patel	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments/Amendments

Applicant's arguments filed 05/18/2007 have been fully considered but they are not persuasive. The applicant argues on Page 6 Lines 17-22 that Kane et al. (US 6326618) does not teach "generating data having a frequency from a plurality of portions of the image", the examiner disagrees for the reasons explained below.

1. First of all the limitation "pluralities of portions of the image" was not presented in the previous set of claims 1,8,9 and 13.
2. Secondly the applicant argues on page 7 lines 4-5 regarding the "present invention compares generated data, e.g. spectra to each other from the portions of the same image, i.e. not to an external standard" in not recited in the claim.
3. Kane (US 6326618) in Fig 1 shows the "Repeating pattern arrows" in both directions. Kane further discloses this at **(Col 4 Lines 9-11 and 22-23)**.
4. Kane also shows at **(Col 12 Lines 5-7)** total number of pixels. Pluralities of pixels represent pluralities of image portions.
5. The applicant refers to Figs 3 for (scan lines) and Fig 4 (frequency v/s the power spectrum graph) on page 7 of the arguments for "plurality of portions".

Kane in Fig 1 shows plurality of scan lines and Fig 5 for the power and frequency spectrum. The graph shows peaks from different portions of the image. Also Kane further discloses in at (Col 10 Lines 25-28,45-50 and fig 40,Col 13 lines 60-65) the comparison between the segmented parts. The current application's fig 4 (Page 7 of amendment) shows overlapping graphs of portions while Kane shows side by side comparisons of the **"segmented parts"** in fig 40.

Thus for the above reasons Kane shows data generated from the pluralities of portions of image.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "generating data having a frequency from a plurality of portions of the image" is not disclosed in the specifications. The applicant is required to show the support of the claimed limitation.

Claims 14-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "wherein the portions are orthogonal to the minute pattern" is not disclosed in the specifications. The applicant is required to show the support of the claimed limitation.

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Kane et al. (US 6326618) hereafter Kane.

1. Regarding Claim 1, Kane discloses a method for analyzing a sample by employing a Fast Fourier Transformation method, comprising: generating an image of a region of the sample to be analyzed in **(Fig 2C, Fig 13 and Col 1 Lines 1-5 and Lines 64-66)**; generating data having a frequency from a plurality of portions of the image **(Col 10 Lines 25-28,45-50 and fig 40,Col 13 lines 60-65)** by the Fast Fourier Transformation method at **(Col 5 Lines 18-22)**; and

analyzing the generated data from the plurality of portions to determine whether the region is normal or abnormal at **(Col 5 Lines 23-40 and Col 12 Lines 27-33)**. Kane shows side-by-side comparisons of the “**segmented parts**” in fig 40, which is analyzing the wafer for the abnormalities. Kane also discloses, “**the analysis by parts allows a weighting of certain segments for emphasis**” at **(Col 10 Lines 28-29) and (correlates the signal deviations by parts at Col 10 Lines 49-50)** showing the plurality of portions of images for analysis.

2. Regarding Claim 2, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 1, wherein the region includes a periodically formed pattern at **(Col 1 Lines 35-41 and Col 5 Lines 28-31)**.

3. Regarding Claim 3, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 1, wherein the region is formed on a semiconductor substrate and corresponds to a cell region including a periodic pattern at **(Col 5 Lines 28-31 and Col 2 Lines 1-2)**.

4. Regarding Claim 4, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 3, wherein the periodic pattern has a line width and is formed by an etching process at **(Col 1 Lines 39-41 and Col 2 Lines 1-2)**.

5. Regarding Claim 5, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 1, wherein the image is generated by a scanning electron microscope at **(Col 1 Lines 1-5 and Lines 64-66)**.

6. Regarding Claim 6, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 1, further comprising defining the image into at least two pixel units at **(Col 12 Lines 1-7)**.

7. Regarding Claim 7, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 1, further comprising providing an alarm when the region is abnormal at **(Col 13 Lines 45-56)**. Kane discloses the operator makes the adjustments to the manufacturing process in response to the information after comparison. **If there is no corresponding instruction for correcting the error** (alarm) the error and the associated data are stored in the database.

8. Regarding Claim 8, Kane discloses a method for analyzing a sample by employing a Fast Fourier Transformation method, comprising: generating a magnified image **(Fig 2C element 110 and 138)** of a minute pattern formed in a cell region of a semiconductor substrate **(Fig 13 and Col 1 Lines 1-5 and Lines**

64-66); measuring a line width of the minute pattern using the magnified image at (Col 4 Lines 63-67, Col 5 Lines 1-11 and Col 6 Lines 50-53); generating data having a frequency from a plurality of portions of the image (Col 10 Lines 25-28,45-50 and fig 40,Col 13 lines 60-65) by the fast Fourier transformation method at (Col 5 Lines 18-22); and analyzing the generated data to determine whether the minute pattern is normal or abnormal at (Col 5 Lines 23-40 and Col 12 Lines 27-33). Kane shows side-by-side comparisons of the “**segmented parts**” in fig 40, which is analyzing the wafer for the abnormalities. Kane also discloses, “**the analysis by parts allows a weighting of certain segments for emphasis**” at (Col 10 Lines 28-29) and (**correlates the signal deviations by parts at Col 10 Lines 49-50**) showing the plurality of portions of images for analysis.

9. Claim 9 is a corresponding apparatus Claim of a method performed by Claim

1.See the explanation of Claim 1.

10. Regarding Claim 10, see the explanation of Claim 5.

11. Regarding Claim 11, Kane discloses the apparatus (**in Fig 2C**) for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 9, further comprising a display part for displaying the generated data at (**Col 12 Lines 7-8**).

12. Regarding Claim 12, see the explanation of Claim 7.

13. Claim 13 is a corresponding apparatus claim preformed by a method of Claim 8. See the explanation of Claim 8.

14. Regarding Claim 14, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 1, wherein the portions orthogonal to a minute pattern on the region at **(Col 11 Lines 41-67 and Col 12 Lines 1-67)** where the complex conjugate indicates the portions are orthogonal to the pattern.

15. Regarding Claim 15, Kane discloses the method for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 8, wherein the portions are orthogonal to the minute pattern at **(Col 11 Lines 41-67 and Col 12 Lines 1-67)** where the complex conjugate indicates the portions are orthogonal to the pattern.

16. Regarding Claim 16, Kane discloses the apparatus for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 9, wherein the portions are orthogonal to a minute pattern on the region at **(Col 11 Lines**

41-67 and Col 12 Lines 1-67) where the complex conjugate indicates the portions are orthogonal to the pattern.

17. Regarding Claim 17, Kane discloses the apparatus for analyzing a sample by employing a Fast Fourier Transformation method as claimed in claim 13, wherein the portions are orthogonal to the minute pattern at **(Col 11 Lines 41-67 and Col 12 Lines 1-67)** where the complex conjugate indicates the portions are orthogonal to the pattern.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayesh A. Patel whose telephone number is 571-270-1227. The examiner can normally be reached on M-F 7.00am to 4.30 pm (5-4-9). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jayesh Patel
06/14/07

JP


JINGGE WU
SUPERVISORY PATENT EXAMINER